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Author: V.S. Chernysh A.E. Ieshkin Yu. A. Ermakov

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## The new mechanism of sputtering with cluster ion beams

V.S. Chernysh,<sup>1\*)</sup> A.E. Ieshkin,<sup>1)</sup> and Yu.A. Ermakov<sup>2)</sup>

<sup>1</sup>*Faculty of Physics, Lomonosov Moscow State University, Leninskie Gory, Moscow, 119991, Russia*

<sup>2</sup>*Scobeltsyn Nuclear Physics Research Institute, Lomonosov State Moscow University, Leninskiye Gory, Moscow, 119991, Russia*

Angular distributions of atoms sputtered from Cu, Mo and In under 10 keV Ar cluster ion bombardment (normal incidence) have been studied experimentally. RBS was used to analyze material deposited on a Al collector. It has been found that the angular distribution of atoms sputtered from Mo differs drastically from the one previously published for Cu by other authors. A new mechanism of sputtering with cluster ions is suggested to describe the observed angular distributions.

Key words: cluster ion beams, sputtering, angular distribution, surface topography

\*) Corresponding author: [chernysh@phys.msu.ru](mailto:chernysh@phys.msu.ru)

### 1. Introduction

Gas cluster ion beams (GCIB) are a unique tool in modern technologies of surface modification [1,2]. During the past two decades, smoothing of surface relief with low level radiation damage has been considered as a one of the most important applications of GCIB.

The results of experiments [3] and computer simulations [4] demonstrated that under cluster ion bombardment the majority of sputtered atoms are ejected in lateral directions. According to the authors [3, 4] just lateral sputtering is the dominating process in surface smoothing. Up to now, extensive information on this smoothing effect for various materials under irradiation by cluster ions of inert and chemically active gases has been accumulated [5, 6]. At the same time, it should be noted that insufficient attention was paid to investigations of angular distributions of sputtered particles. It is obvious that such data are of interest not only for applications, but also, are needed for developing and understanding of mechanisms of cluster ion interaction with solids.

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